



COMMENSAL RODENT FACTS

BIOLOGY, BEHAVIOR AND MANAGEMENT
STRATEGIES FOR RATS & MICE

Norway Rat • Roof Rat • House Mouse

LIPHATECH®

THE TROUBLE WITH COMMENSAL RODENTS

Commensal rodents include Norway rats, roof rats and house mice. Commensal refers to their ability to live off and alongside humans. This brings the potential for a number of serious problems, including:

- **Spread of serious diseases**, such as salmonellosis (food poisoning), leptospirosis, hantavirus, rickettsialpox and lymphocytic choriomeningitis (LCM).
- **Carry parasitic pests**, including fleas, ticks and other ectoparasites, which potentially spread other diseases, such as Lyme disease and bubonic plague.
- **Consume or contaminate** about 20% of the world's food supply.
- **Gnaw**, causing expensive structural damage. Gnawing of wires can also start fires. Plumbing and insulation systems can also be damaged.
- **Cause anxiety** for people and pets of infested areas.
- **Pose serious risks for food facilities**. Even a single rodent can cause serious problems for a food facility including fines, poor inspection scores, disgruntled employees and lost business.

KNOWLEDGE IS THE KEY

To effectively prevent or control rodent infestations, you must arm yourself with information. Learning about rodent behavior, control materials and treatment tactics is essential to planning an effective strategy for controlling unwanted rats and mice.

The Commensal Rodent Facts guide is an easy-to-use reference with in-depth information from numerous industry experts and sources. It's designed to help pest management professionals develop an integrated approach for controlling commensal rodents.

This knowledge can result in fewer callbacks, more satisfied customers and the reduced risk of rodent-related damage and disease.

INTEGRATED PEST MANAGEMENT (IPM) FOR RODENT CONTROL

IPM is a science-based, decision-making process. It uses site-specific criteria to determine the pest threshold, selects the methods and tools most appropriate for the site and monitors the pest activity and environmental conditions to maximize control effectiveness and minimize risks to nontarget species and the environment.

Elements of an IPM Program

- **Inspection/Site Survey**

Inspect structures and surrounding areas to determine the scope of the infestation and identify conditions contributing to the problem. A thorough site survey is a crucial starting point and will identify the conditions conducive to infestation:

- **Access** (entry points): Openings in the building envelope, such as gaps under doors, doors left open, holes around utility pipes, damaged vents or cracks in the foundation.
- **Harborage** (shelter): Areas that provide nesting sites and protection. This includes clutter, dense vegetation touching the structure, woodpiles near walls, crawlspaces and wall voids.
- **Attractants** (food & water): Easily accessible resources like poorly stored trash, fallen birdseed, pet food left out overnight, leaky outdoor faucets or grease buildup near kitchen equipment.

A thorough inspection will identify the potential pest species, estimated population and some history of the pest(s) at the site. Possible risks, such as vulnerable people and dangers if control takes too long, can also be recognized.

- **Prevention**

Exclusion and sanitation actions can be taken once the site inspection identifies needed prevention.

- **Control**

Once the site is inspected and prevention measures are in place, tools can be selected for control. Traps, attractants and/or rodenticides can be chosen based on the specific situation. In addition, any corrective actions needed can be put in place. This may include sanitation, structural corrections and changes to occupant behavior. Lastly, the pest management professional and customer must agree on a service schedule.

- **Monitor**

Continue to monitor pest populations, areas vulnerable to pests and efficacy of prevention and control methods.

- **Follow-up**

Conclude with a customer meeting to set ongoing preventive controls and management strategies. Strong communication with the customer during all stages and as you conduct follow-up is important for success.

- **Documentation**

Maintain written records that document decisions, treatments implemented and record results.

Based on the assessment, each rodent control program may look different, but successful management of unwanted rodents begins with commitment from the pest management professional and the customer to successfully implement the pest management strategies.

Continue reading for more details on rodent biology, inspections, prevention and control strategies.

MUS MUSCULUS

HOUSE MOUSE

Other Names: common house mouse, domestic house mouse



Overview

Body is small, pear-shaped and slender, 2.5" to 3.5" long. Average weight is 0.5 to 1 ounce.

Ears are relatively large for its size. They hear very well in both sonic and ultrasonic ranges.

Eyes are small and somewhat protruding. Mice are color-blind and can only recognize objects up to 10' away.

Teeth include four front incisors, each about 1/16" wide.

Color varies from light brown to dusky gray to nearly black. Their belly is lighter.

Tail is 3-4" long, semi-naked and longer than the head and body combined.

Rodent vibrissae (whiskers on the face and guard hairs on the sides and back) stay safely against walls, under objects and in burrows. The whiskers are also used to detect motion and test surfaces, such as glue traps before stepping on them.

Droppings have pointed ends and are about 1/4" or less in length. Fresh droppings are soft and dark in color. A house mouse averages 50-75 droppings per day.



Actual Size

Geographic Range

Geographic range of the house mouse is throughout the United States and south of the boreal forest in Canada.

Food Preferences and Consumption

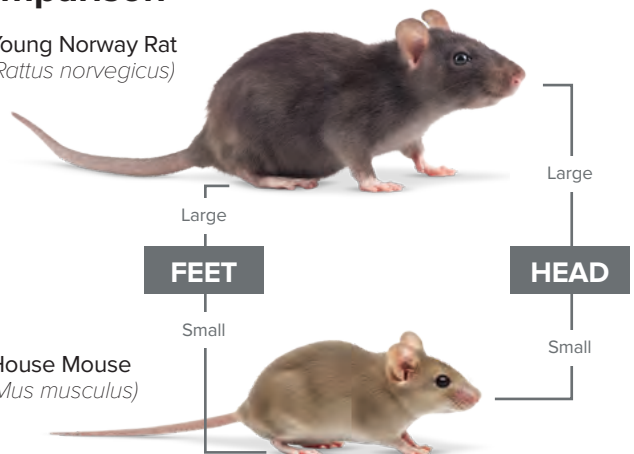
Omnivores. Seeds, cereal grains, fruits, vegetables and meats. Mice frequent many feeding sites – often 20-30 – during their active period, eating small amounts of food from each site. Daily consumption: 1/10 ounce. Water is not essential to survival if food contains at least 16% moisture.

Habits

Excellent climbers. Can be found in cultivated fields and other outdoor environments. Can also be found at or below ground level and in attics. Mice explore their territory daily in search of food. Nocturnal. Most activity and feeding takes place between a 1/2 hour after sunset and 1/2 hour before sunrise. Strong social hierarchy. Able to swim.

Comparison

Young Norway Rat
(*Rattus norvegicus*)



Mouse Facts

- Mice can survive an **8-foot fall** onto a hard surface.
- A mouse can run at about **12 feet per second**.



RATTUS RATTUS

ROOF RAT

Other Names: Alexandrine rat, black rat, fruit rat, ship rat



Overview

Body is slender, 6.5" to 8" long. Average weight is 6 to 12 ounces.

Ears are large and cover the eyes if bent forward.

Eyes are large and prominent. Because rats are color-blind and have poor eyesight, they primarily see light, shadow and movement.

Teeth include four front incisors, each about 1/8" wide. Rats are able to gnaw through wood, lead, aluminum, copper, cinder block and uncured concrete.

Rodent vibrissae (whiskers on the face and guard hairs on the sides and back) stay safely against walls, under objects and in burrows. The whiskers are also used to detect motion and test surfaces, such as glue traps before stepping on them.

Color varies from dark brown to nearly black. Their belly is lighter and grayish.

Tail is hairless and longer than the head and body, 7.5" to 10" long. Uniform color from top to underside.

Nose and muzzle are pointed. Roof rats have an acute sense of smell.

Droppings have pointed ends and are about 1/2" or less in length. Fresh droppings are soft and dark in color. A roof rat averages 40-50 droppings per day.



Actual Size

Geographic Range

In the United States and Canada, roof rats thrive in warm, coastal and port regions, though their range is expanding inland via transport and irrigation. They are primarily found along the Pacific, Gulf and southern Atlantic coasts, as well as in the desert Southwest and southern Ontario.

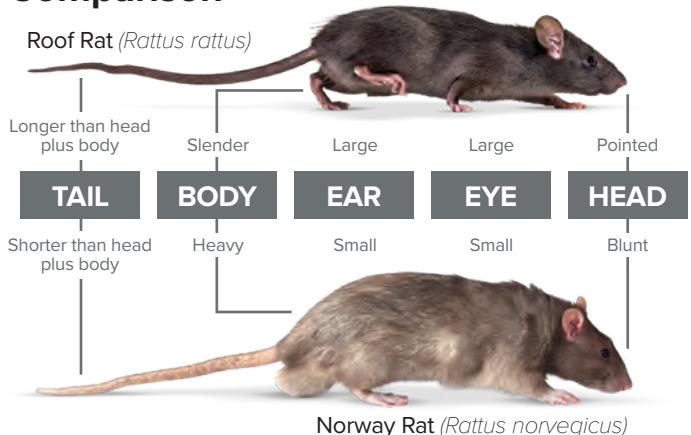
Food Preferences and Consumption

Omnivores. Seeds, fruits, vegetables, eggs and grain. Rats visit fewer food sites than mice but eat more at each site. Daily consumption: 1/2 to 1 ounce of food. Drink up to 2 ounces of water daily.

Habits

Highly agile and nocturnal, roof rats are expert climbers that typically nest in upper building levels or dense outdoor vegetation (like palm). They operate within a strict social hierarchy, with peak activity occurring between dusk and dawn.

Comparison



RATTUS NORVEGICUS

NORWAY RAT

Other Names: brown rat, gray rat, common rat, house rat, wharf rat, sewer rat, barn rat and water rat



Overview

Body is heavy, 7" to 10" long. Average weight is 10 to 17 ounces.

Ears are average, close to the body and won't cover the eyes if bent forward.

Eyes are small. Because rats are color-blind and have poor eyesight, they primarily see light, shadow and movement.

Teeth include four front incisors, each about 1/8" wide. Rats are able to gnaw through wood, lead, aluminum, copper, cinder block and uncured concrete.

Rodent vibrissae (whiskers on the face and guard hairs on the sides and back) stay safely against walls, under objects and in burrows. The whiskers are also used to detect motion and test surfaces, such as glue traps before stepping on them.

Color is usually grayish-brown, but may vary from gray to dark brown. Belly is lighter.

Tail is shorter, 6" to 8.5" long. It is dark on top with a lighter underside.

Nose and muzzle are blunt. Norway rats have an acute sense of smell.

Droppings have blunt ends and are about 3/4" or less in length. Fresh droppings are soft and dark in color. A Norway rat averages 40-50 droppings per day.



Actual Size

Geographic Range

Due to their excellent adaptability, Norway rats are found throughout the United States and most of the urban and agricultural areas in Canada.

Food Preferences and Consumption

Omnivores. Meats, fish, flour, cereal grains, fruits and vegetables. They eat almost any human food. Rats visit fewer food sites than mice but eat more at each site. Daily consumption: 3/4 to 1 ounce of food. Drink 1/2 to 1 ounce of water daily.

Habits

Norway rats burrow extensively in soil and are excellent swimmers and good climbers. They often nest in basements and lower portions of buildings. Nocturnal. Most activity and feeding takes place between 1/2 hour after sunset and 1/2 hour before sunrise. Very strong social hierarchy – the biggest and the strongest Norway rats get the best food and harborage.

Rat Facts



- Rats (and all rodents) **prefer harborage as close to food as possible**. If necessary, they will travel several hundred feet from good harborage to good food.
- Rats have been known to **survive a fall from 25 feet** to a hard surface.
- Rats can and do **enter buildings by swimming up through toilets**. Dry drains and toilets are even easier routes of entry for rats coming from a sewer system.

REPRODUCTION AND DEVELOPMENT

Mice and rats reproduce rapidly, as is generally the case with small prey animals. Their relatively short life spans, short gestational periods and rapid sexual maturity make effective rodent control critical. The reproductive cycle and number of rodent offspring increases with adequate food, water and harborage.

House Mouse and Rat Reproduction Cycle

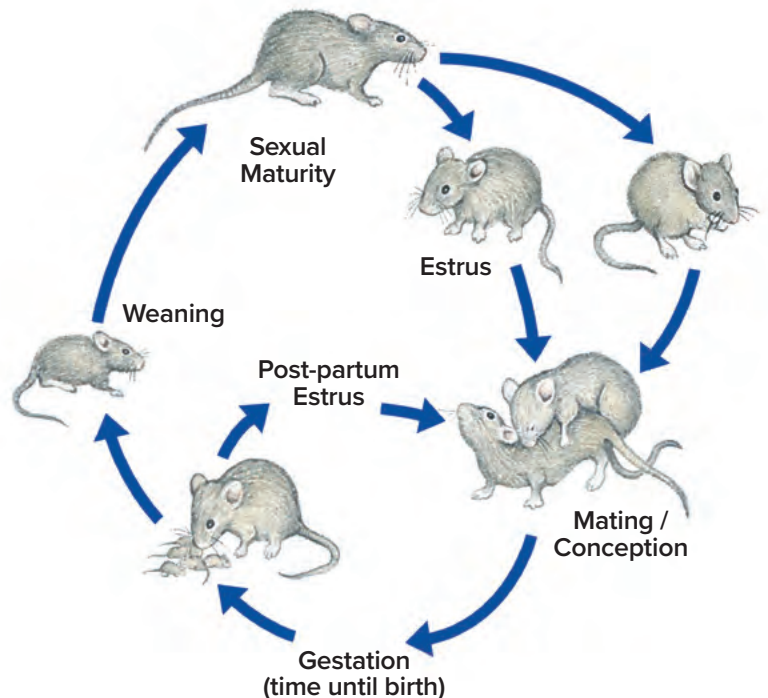
Rodent	Gestation (time to birth)	Pups per Litter	Eyes Open	Begin Exploring	Weaning	Sexual Maturity
House Mouse	18-21 days	5-6	14 days	3 weeks	3 weeks	6-10 weeks
Roof Rat	20-23 days	4-8	9-14 days	2 weeks	4-5 weeks	12 weeks
Norway Rat	21-23 days	6-12	9-14 days	2 weeks	3-4 weeks	8-12 weeks

All numbers are approximations.

Related Reproductive Characteristics

House mice, Norway rats and roof rats share several reproductive characteristics:

- After giving birth, commensal rats and mice can experience postpartum estrus. This means the female can be in heat and able to become pregnant again in as little as 24 to 48 hours.
- Females can be pregnant and still produce milk to feed their current litter of pups. However, the gestational period may be slightly longer in this case.
- They will reproduce year-round in stable environments with adequate food, water and harborage. Less favorable conditions limit reproduction to spring and autumn.
- Normal life expectancy is approximately one year. However, research has found most rats and mice do not survive a year in the wild. Predation, disease, starvation, cannibalism and PMPs all take their toll.



INSPECTION PROCESS

Rodent behavior is predictable. A thorough inspection will provide clues that point to an infestation. The findings can then be used to choose an appropriate rodent control tool, timing and techniques.

Signs of an Infestation

Look for these common signs of a rodent infestation:

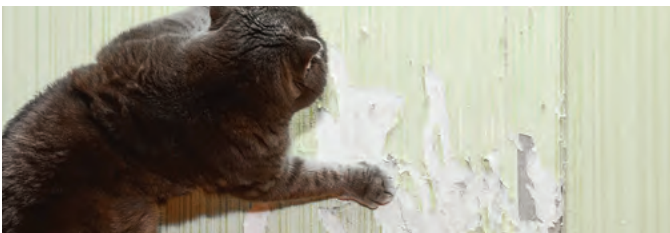
- Runways are paths that form between feeding and harborage areas. Rodents use scent and memorization to follow established pathways between harborage and food/water. They prefer to move along objects. Identifying rodent movement patterns helps to effectively place traps and bait stations.
- Sebum is a thick, oily substance on the rodents fur that mixes with dirt and dust to create rub marks along their runways.
- Droppings can offer clues to the nature of the infestation based on the size and shape. These can be misidentified so decisions should be made based on more than one sign. Fresh droppings are often soft and shiny while older droppings tend to be dry and dull. Moisture in the environment, or lack of it, can affect the way droppings appear.
- Odor when rodents are present can vary from a musky smell to an ammonia odor with larger infestations.
- Urine stains are another clue and are usually visible using a UV black light (365nm). Many household and commercial products also fluoresce so it is important to take care in using this as an identifier.
- Gnaw marks can be visible on wood, wiring, insulation and other materials. Fresh gnaw marks are often lighter in color and may darken over time. Adult mouse tooth marks are about 1/16th inch wide. The rodent makes the marks with their incisors so they are usually in pairs. A good hand lens can help identify gnaw marks.
- Tracks, such as footprints and tail drags may be seen in dusty locations. To view difficult-to-see tracks, shine a strong flashlight at a low angle across the dust. A non-toxic tracking powder, such as a mason's line chalk placed on a suspected rodent trail, and reinspected the following day, may assist in identifying tracks.
- Agitated pets can signal the presence of rodents. House pets, such as cats and dogs, can hear rodents gnawing, digging, running and fighting.

The Inspection Process

- Include both day and night assessments to ensure all rodent indicators are found. Trail cameras may be helpful in capturing images of rodent activity.
- Interview the customer for information about rodent sightings, sounds, etc.
- Be thorough, beginning with the exterior premises.
- Think three-dimensionally, looking both high and low. Rodents have been known to climb 30 feet to gain access to a structure, roof rats even more.
- Identify interior and exterior problem areas including:
 - Runways
 - Feeding sites
 - Vents & other openings
 - Harborages
 - Holes or cracks in the structure
 - Nests
 - Water supplies
 - Burrows
 - Pipe outlets & inlets
- Check all dark areas with a flashlight.

Inspection Tools

- Flashlight with a strong beam.
- UV black light (365nm) to help identify urine/urine trails. Amber glasses to protect your eyesight are recommended.
- Protective gloves.
- Knife, palette knife or spatula to test the age of droppings and to scrape droppings out from under objects.
- Specimen container to collect unknown specimens.
- Knee pads to protect your knees from sharp objects.
- Inspection checklist to act as a reminder to inspect critical areas, and so steps aren't overlooked.
- Extensive notes and diagrams can be collected with a clipboard, paper and pencil or electronically.
- Binoculars make it easier to see what you can't be near.
- Respirator with appropriate filter to prevent inhaling dust, which may be contaminated. Consult your safety equipment supplier for current recommendations.
- Ladder to access attics and other high spaces.
- Trail camera to supplement the in-person inspections and for use when an in-person night inspection isn't possible. An infrared flash will capture rodent activity.
- Hand sanitizer (over 62% alcohol) to kill bacteria.



RODENT-PROOF THE SITE

Prevent infestations by changing the physical conditions of the site through exclusion and sanitation.

Exclusion

The best way to keep buildings rodent free is to prevent rats and mice from getting inside. Rodents fit through tiny openings and can gnaw through wood, lead, aluminum, copper, cinder block and uncured concrete. Mice can squeeze through gaps larger than $\frac{3}{8}$ " to about $\frac{1}{2}$ ". Adult rats need an opening larger than $1\frac{1}{3}$ " in diameter. Juveniles may be able to fit through a smaller opening. They will enlarge openings that are too small by gnawing it big enough for their body to fit through.



Rodents can fit through very small openings.

The following measures, with the proper materials, will make buildings less accessible to rodents:

- Patch openings in walls larger than $\frac{1}{4}$ " using gnaw-proof materials, such as steel sheeting, $\frac{1}{4}$ " inch hardware cloth, galvanized steel and concrete.
- Seal gaps under siding at the top of the foundation.



- Seal openings around pipes and conduits where they pass through exterior walls.
- Close outside doors tightly when not in use.
- Install tight-fitting weather stripping on the bottom of all pedestrian doors and overhead doors.
- Cover all air vents with $\frac{1}{4}$ " hardware cloth. Make sure dryer vent "flaps" are working properly.

Sanitation

Eliminating places that may provide rodents with shelter, water and food is the purpose of sanitation.



- Eliminate debris in and around buildings and grounds. Debris could include clutter, leaf litter, trash, cut wood and yard waste.
- Trim weeds and brush, overgrown plants and shrubs and keep grass short (3" or less) to minimize cover and food sources around the building perimeter.
- Clean up food waste and spillage daily.
- Store food 12-15" off the floor for easy inspection and sanitation. Use rodent-proof containers, when possible.
- Allow 24" aisles between stored materials and walls for improved sanitation and inspection.
- Screen dumpster drainage holes with hardware cloth.
- Don't leave pet food out overnight. Clean up dog droppings daily.
- Eliminate water sources available to rodents.
- Clean up windfall fruits, nuts and bird feeder spillage daily.

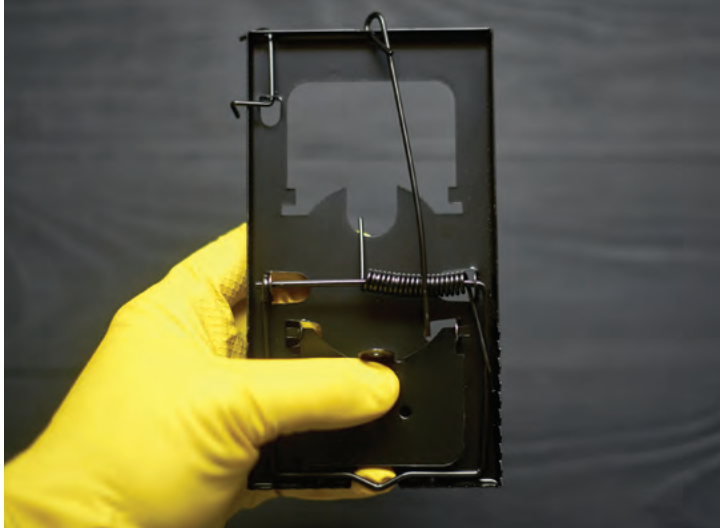


TRAPPING

Trapping is an effective part of an assessment-based IPM program. It allows retrieval of the carcass so the species of rodent, gender and approximate age can be identified. Since carcasses are collected, traps also prevent dead rodent odor problems at the site. Once rodents and their patterns have been identified, appropriate trapping methods can be used.

Trapping Tips

- Store snap traps away from insecticides and chemicals that may impart an odor. Rodents have a keen sense of smell and this may repel them from the trap.
- Bait snap traps with food that is more attractive than other readily available food sources, such as gumdrops, peanut butter, bacon, nutmeats or dried fruit (raisins).
- Secure bait to the snap trap trigger – a length of thread works well. For rats, fish (tuna) and meat (can/dog food) may be used to bait traps.
- Glue boards can be baited, if necessary. Greasy foods may cause the glue to lose its stickiness.
- Bait some mouse snap traps with nesting materials, such as a small cotton ball or a short piece of yarn. Enhance it with a drop of vanilla extract. Mice constantly look for nesting material.
- Position snap traps and glue boards to intercept rodents in runways. Place snap traps with the trigger toward the runway – generally along a wall, in corners, behind and under objects and near abundant tracks and droppings. Snap traps also may be attached to pipes and beams used as runways.
- More traps are better than fewer traps.
- Prebait traps without setting them. Continue prebaiting traps until rodents take the bait and commit to the trap. This may take several days for mature rodents.
- To be effective, glue boards must be placed in a way that rodents do not suspect the device (i.e. blind corners, steps, etc.). They shouldn't be placed in areas with excessive dust or wetness. Check glue boards frequently to prevent rodents from escaping.
- For mice, repeating or automatic mechanical traps may be used. When using metal multi-catch traps to monitor rodent activity as part of a comprehensive rodent control strategy, watch for tracks in the dust on the top of low-profile traps, which indicate mice are running over the top of them.



A Combined Approach to Rodent Control

1. Liphatech's NoTox™ attractant is available as soft bait or a mini block. It is often readily accepted by both rats and mice when used as a lure on traps.
2. Place mechanical or snap traps and glue boards in areas unsuitable for rodenticide applications.
3. Use mechanical traps as a monitor exclusively and not as a lone control solution. Rodents will outbreed this control method.



RODENTICIDE

Rodenticides may be the most effective approach for rodent control at a site. If the assessment shows the need for rodenticide use, select a rodenticide with an active ingredient and formulation suited to the specific environment and infestation. Correct bait placement is the key to an effective program. Proper placement increases the likelihood of success and protects non-target primary exposure to the bait.

Know Your Active Ingredients

Rodenticides are available with many active ingredients. Each type differs in the way it causes death.

- **Anticoagulant** rodenticides (ARs) inhibit the rodent's blood clotting mechanism, causing internal bleeding which leads to death. The delay between ingestion and death prevents bait shyness. There are two types of anticoagulant active ingredients: first generation and second generation. Vitamin K₁ is the antidote for both.
 - **First Generation Anticoagulants** (FGARs) are referred to as "multiple feed" products because rodents must feed more than once before ingesting a lethal dose. Active ingredients that fall in this category include chlorophacinone, diphacinone and warfarin.
 - **Second Generation Anticoagulants** (SGARs) are referred to as "single feed" products because rodents can ingest a lethal dose in a single night's feeding with first dead rodents appearing in 4-5 days. Active ingredients that fall in this category include bromadiolone, difethialone, brodifacoum and difenacoum.
- **Non-Anticoagulant** rodenticides are available that cause death in various ways. They are typically effective in fighting anticoagulant-resistant rodent populations. They take effect quickly and rodents typically stop feeding after one meal. Once a lethal dose is ingested, time to death can vary between less than a day to a few days. There is no antidote available for non-anticoagulants. Examples of non-anticoagulants include:
 - **Bromethalin** is an acute neurotoxin, that attacks the brain's central nervous system.
 - **Cholecalciferol** induces toxic levels of calcium in the body, leading to kidney damage, bleeding and heart problems.
 - **Zinc Phosphide** is a systemic poison that attacks many bodily functions, when ingested.

Properly handled by pest management professionals, rodenticides with anticoagulant or non-anticoagulant active ingredients provide an effective rodent control option, and can be used around pets and non-target animals, when applied as directed.

Choosing the Rodenticide Formulation

It is important to choose the rodenticide formulation that will work best for your situation. Factors to consider include the active ingredient, type of account, placement of the bait, if high moisture is a concern and the type of infestation.



Types of Formulations:

- **Soft Baits** can be used anywhere traditional block bait is used for maintenance baiting to tough rodent challenges. They can be placed on horizontal or vertical bait station rods.
- **Block Baits** can contain many different ingredients attractive to rodents and have edges providing gnawing surfaces. The center hole in most block baits allows for easy mounting on bait station rods.
- **Paraffin Blocks** resist moisture, making them ideal for moist environments. Some are labeled for sewer applications.
- **Pellets** work well for burrow baiting when paraffinized as they are moisture resistant. Paraffinized pellets resist moisture.
- **Pellet Place Packs** are ideal for proper placement in hard-to-reach baiting locations when non-targets aren't a concern. Those with paraffin also provide moisture protection.
- **Meal Bait** works well for burrow baiting in areas where non-targets can't access the meal.

Consideration should be given to the active ingredient based on each specific situation before choosing a formulation.

RODENTICIDE

Rodenticide Application Tips

Your chances of successfully controlling a rodent infestation increases greatly when rodenticide is applied correctly and according to the label. More tips follow:

Knowledge is Your Best Weapon

- Knowing the type and behavior of each localized rodent population helps choose the best strategy for attraction and baiting:
 - Neophobia (the fear of new objects) makes rodents nervous about changes in their territory and unaccepting of new objects. It may take days or weeks for rats, and some mice, to accept a bait station. Use a phased approach for baiting.
 - Neoindifference (a lack of interest or concern to new objects) is when rodents, usually rats, show no specific fear or curiosity to new objects and they simply ignore the change. This type of population is often found in rodents living in environments with high levels of disturbance or change or where new objects are common. Conditioning devices with droppings, dirt and debris is one way to help attract a rodent to new objects in their space. Use an immediate approach for baiting.
- Using information obtained during the inspection, place baits in rodent runways as close to their nest as possible.
- Pre-baiting is the process of placing non-toxic bait prior to toxic bait in order to increase product acceptance and to offer a way to monitor rodent feeding.
- Use a rodenticide labeled for the target rodent species and an appropriate formulation for the environment.
- Place rodenticides in areas inaccessible to children and non-target animals, or in properly installed, tamper-resistant bait stations. Bait stations provide added security for non-targets and protect bait from the elements.



- Use a sufficient amount of product, within the amounts allowed by the label, to ensure an uninterrupted supply of bait between service visits.
- In areas of identified mouse activity, rodenticide bait placements should be no further than 8-12' apart due to their limited home range. Place control material as close to the nest as possible, and between the nest and food source.
- In areas of identified rat activity, rodenticides should be placed every 15-30'. Concentrate placements in runways and near burrows or gnawed openings.
- Keep a detailed record of bait station placements, rodenticide formulations, amounts used and service dates.

Liphatech Solutions

- Aegis bait stations for rats and mice help keep bait away from non-target species.
- FirstStrike soft bait is effective for clean-outs, lingering rodents or heavy infestations.
- Resolv and Flatline soft baits are effective **everyday** solutions for light to heavy rodent activity.
- Resolv mini blocks are an effective **all-weather** bait.
- TakeDown II soft bait or mini blocks provide **faster** results.*
- All Liphatech soft baits maintain their integrity in **hot environments**.
- Generation and Maki pellets are paraffinized and work well for **burrow baiting**.
- BlueMax mini blocks & meal contain preservatives as **mold inhibitors**.
- NoTox soft bait and mini blocks are an effective **prebaiting** tool.

*When compared to anticoagulant rodenticides.

RODENTICIDE

A Liphatech Product for Any Situation

Liphatech's full line of professional rodent control products provides an active ingredient and formulation for every job, from everyday maintenance to the toughest rodent infestations, when used within an IPM program.



FirstStrike® Soft Bait

- Palatable second-generation anticoagulant soft bait
- Contains difethialone
- Effective for gaining control of large or small rodent populations



Generation® Mini Blocks & Pellets

- Versatile second-generation anticoagulant rodenticide
- Contains difethialone
- Multiple formulations make it a good choice for many situations



Resolv® Soft Bait & Mini Blocks

- Palatable second-generation anticoagulant bait
- Contains bromadiolone
- A good choice for budget-minded PMPs faced with moderate rodent infestations



BlueMax® Mini Blocks & Meal Bait

- Multi-use second-generation anticoagulant rodenticide
- Contains difethialone
- Paraffin blocks and meal are moisture resistant and work well where crumbs and scatter are a concern, like food processing and commercial accounts



Flatline® Soft Bait

- Palatable first-generation anticoagulant (multiple-feed) soft bait
- Contains chlorophacinone (the first and only chlorophacinone soft bait for the professional market)
- Best choice for everyday use to help stop damage from rodents



Maki® Pellets & Paraffin Bars

- Second-generation anticoagulant rodenticide with paraffin
- Contains bromadiolone
- Paraffinized formulations work well where moisture is a concern



TakeDown® II Soft Bait & Mini Blocks

- An acute rodenticide that provides faster results than anticoagulant rodenticides
- Contains bromethalin
- Effective in fighting anticoagulant-resistant rodent populations, especially those in a commercial setting



NoTox™ Soft Bait & Mini Blocks

- Non-toxic bait for monitoring activity or attracting rodents
- Contains no poison
- Pose no danger to rodent predators or any other curious animals



Learn More About
Liphatech Products



CARBON DIOXIDE (CO₂) GAS

Carbon Dioxide (CO₂), when registered by the EPA as a pesticide, can be used as an alternative form of rodent control. When the gas is released in a confined space, such as in burrowing rodent tunnel structures, pests succumb to asphyxiation. For example, the CO₂ in Liphatech's labeled IGI CO₂ cylinders is an EPA-registered pesticide. IGI CO₂ is approved for outdoor use to control listed pests in their burrows.



Why Use IGI CO₂ for Burrowing Rodent Control?

- **EPA-Registered & Certified:** Approved by the EPA and certified for use in pest management programs under the USDA National Organic Program.
- **Targeted Action:** Works via asphyxiation by releasing CO₂ into confined burrow systems.
- **Versatile Environments:** Approved for use in municipal, residential, commercial and field settings.
- **Proximity:** Can be applied next to occupied buildings (outdoor use only).
- **Low Profile:** The gas is non-flammable, invisible and odorless, allowing for quiet application. CO₂ does not leave a residue in soil or other spaces.
- **Broad Target List:** Effective against rats, groundhogs*, voles*, moles, pocket gophers and ground squirrels.

*Not permitted for use against groundhogs and voles in California



Contact Your
Liphatech Rep



Watch Videos
About IGI CO₂



EXPERTISE

Liphatech stands alone in the rodenticide industry. Offering an unmatched level of expertise and comprehensive support through a dedicated team of specialists, Liphatech provides solutions that go far beyond product lines. This is done by combining extensive real-world field experience with personalized technical troubleshooting and professional training.

INNOVATION

This commitment to professional market-leading innovation is rooted in a history of research and development, including:

- The invention and registration of three primary active ingredients: chlorophacinone, bromadiolone and difethialone.
- Exclusive formulations like FirstStrike—the only soft bait containing difethialone—as well as Flatline, the industry's first chlorophacinone soft bait. Liphatech's TakeDown II is the pioneering bromethalin soft bait for professional pest control.

Liphatech is a subsidiary of France-based DeSangosse Group, with worldwide research, development and manufacturing capabilities for agricultural products and rodenticides.

Liphatech is well known for our history of innovation, providing pest management professionals with the products and guidance needed to solve their toughest pest problems. Liphatech is a leader that stays ahead of the industry so our customers can too.



liphatech.com
888.331.7900

